C of C

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re:

U.S. Patent No: 6,766,230 B1

Issued: July 20, 2004

Inventors: Rizzoni, et al.

Serial No.: 10/039,634

Entitled: MODEL-BASED FAULT DETECTION AND ISOLATION SYSTEM AND METHOD

Examiner: Michael J. Zanelli

Group Art Unit: 3661

Docket No.: OSU1159-143C

Certificate
SEP 0 2 2004
of Correction

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8 (A)

Date of Deposit: August 23, 2004

I hereby certify that this correspondence is being deposited with the U.S. Postal Service with sufficient postage as first-class mail in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Trisha M. Beachy

Trisha M. Beachy, Paralegal

Sir:

REQUEST FOR CERTIFICATE OF CORRECTION PURSUANT TO 37 C.F.R. 1.322

Transmitted herewith is a Certificate of Correction for U.S. Patent No. 6,766,230 B1, which issued on July 20, 2004. Upon reviewing the patent, the patentee noted that the following typographical errors were made by the Patent and Trademark Office, which should be corrected as follows:

In column 3, line 53, please delete "testing" and insert -- testing, --.

In column 4, lines 14-18, please delete

"u_{0i}, i = 1..m are the input vectors
Δu_i, i = 1..m are the input fault vectors
θ_{0i}, i = 1..m are the nominal parameter vectors
$\Delta\theta_i$, I = 1..m are the parameter fault vectors
x_i, i = 1..m are the state vectors"

and insert --

u_{0i}, i = 1..m are the input vectors
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θ_{0i}, i = 1..m are the nominal parameter vectors
$\Delta\theta_i$, I = 1..m are the parameter fault vectors
x_i, i = 1..m are the state vectors --.

In column 4, lines 24-29, please delete

"

$$\begin{cases} \dot{x}_1 = f_1(x_1, u_1, \theta_1) \\ y = h_1(x_1, u_1, \theta_1) + \Delta y \end{cases}, x_1 \in \Gamma_1 \qquad \text{(1)}$$

$$\vdots \qquad\qquad \vdots$$

$$\begin{cases} \dot{x}_m = f_m(x_m, u_m, \theta_m) \\ y = h_m(x_m, u_m, \theta_m) + \Delta y \end{cases}, x_m \in \Gamma_m$$

"

and insert --

$$\begin{cases} \dot{x}_1 = f_1(x_1, u_1, \theta_1) \\ y = h_1(x_1, u_1, \theta_1) + \Delta y \end{cases}, \quad x_1 \in \Gamma_1$$

$$\vdots \qquad\qquad \vdots \qquad\qquad (1)$$

$$\begin{cases} \dot{x}_m = f_m(x_m, u_m, \theta_m) \\ y = h_m(x_m, u_m, \theta_m) + \Delta y \end{cases}, x_m \in \Gamma_m$$

--.

In column 4, line 31, please delete "u_{0i}, = u_{0i} + Δu_i , θ_i =θ_{0i} +$\Delta\theta_i$, i = 1..m" and insert -- u_{0i}, = u_{0i} + Δu_i , θ_i =θ_{0i} +$\Delta\theta_i$, i = 1..m --.

In column 4, lines 37-44, please delete

"
$$\begin{cases} \dot{\hat{x}}_1 = g_1(\hat{x}_1, u_1, \hat{\theta}_1, y) \\ \hat{y}_1 = h_1(\hat{x}_1, u_1, \hat{\theta}_1) \end{cases}, \hat{x}_1 \in \Gamma_1 \qquad (2)$$
$$\vdots \qquad\qquad \vdots$$
$$\begin{cases} \dot{\hat{x}}_m = g_m(x_m, u_m, \hat{\theta}_m, y) \\ \hat{y}_m = h_m(\hat{x}_m, u_m, \hat{\theta}_m) \end{cases}, \hat{x}_m \in \Gamma_m$$
"

and insert --

$$\begin{cases} \dot{\hat{x}}_1 = g_1(\hat{x}_1, u_1, \hat{\theta}_1, y) \\ \hat{y}_1 = h_1(\hat{x}_1, u_1, \hat{\theta}_1) \end{cases}, \quad \hat{x}_1 \in \Gamma_1$$
$$\vdots \qquad\qquad \vdots \qquad (2)$$
$$\begin{cases} \dot{\hat{x}}_m = g_m(x_m, u_m, \hat{\theta}_m, y) \\ \hat{y}_m = h_m(\hat{x}_m, u_m, \hat{\theta}_m) \end{cases}, \hat{x}_m \in \Gamma_m$$

--.

In column 4, line 48, please delete

"
$$\hat{x}_i \to x_i \text{ for } t \to \infty, \; i = 1 \ldots n \qquad (3)$$
"

and insert --

$$\hat{x}_i \to x_i \quad \text{for} \quad t \to \infty, \quad i = 1..n \qquad (3)$$

--.

In column 5, line 41, please delete "$a_{lat} \leqq 0.2g$" and insert -- $a_{lat} \leq 0.2g$ --.

In column 5, lines 45-50, please delete

"

$$\begin{cases} \dot{v}_x = \frac{F_x}{M} + v_y\dot{\psi} \\ \dot{v}_y = -\frac{2}{M}(C_f + C_r)\frac{v_y}{v_x} - \frac{2}{M}(aC_f - bC_r)\frac{\dot{\psi}}{v_x} - v_x\dot{\psi} + \frac{2C_f}{MG}\delta \\ \ddot{\psi} = -\frac{2}{I}(aC_f - bC_r)\frac{v_y}{v_x} - \frac{2}{I}(a^2C_f + b^2C_r)\frac{\dot{\psi}}{v_x} + \frac{2aC_f}{IG}\delta \end{cases} \quad (4)$$

"

and insert --

$$\begin{cases} \dot{v}_x = \frac{F_x}{M} + v_y\dot{\psi} \\ \dot{v}_y = -\frac{2}{M}(C_f + C_r)\frac{v_y}{v_x} - \frac{2}{M}(aC_f - bC_r)\frac{\dot{\psi}}{v_x} - v_x\dot{\psi} + \frac{2C_f}{MG}\delta \\ \ddot{\psi} = -\frac{2}{I}(aC_f - bC_r)\frac{v_y}{v_x} - \frac{2}{I}(a^2C_f + b^2C_r)\frac{\dot{\psi}}{v_x} + \frac{2aC_f}{IG}\delta \end{cases} \quad (4)$$

--.

In column 6, lines 2-16, please delete

"

$$\dot{\hat{x}} = \left(\frac{\partial H(\hat{x})}{\partial \hat{x}}\right)^{-1} M(\hat{x})sign(V(t) - H(\hat{x})) + B\delta \quad (5)$$

"

where

$H(x)=[h_1(x)\ h_2(x)\ h_3(x)]$

$h_1(x)=\dot{\psi}=r$

$h_2(x)=\dot{r}$

$h_3(x)=\ddot{r}$

$\gamma(t)=[v_1(t)\ v_2(t)\ v_3(t)]$

$v_i(t)=r(t)$

$v_{i+1}=(m_i((x))sign\ (x(v_i(t)-h_i(\hat{x}(t))))_{eq},\ i=1,2$

$M(\hat{x})=diag\ (m_1(\hat{x})\ m_2(\hat{x})\ m_3(\hat{x}))$

and insert --

$$\dot{\hat{x}} = \left(\frac{\partial H(\hat{x})}{\partial \hat{x}}\right)^{-1} M(\hat{x}) \operatorname{sign}(V(t) - H(\hat{x})) + B\delta \qquad (5)$$

where

$H(x) = [h_1(x)\ h_2(x)\ h_3(x)]$
$h_1(x) = \psi = r$
$h_2(x) = \dot{r}$
$h_3(x) = \ddot{r}$
$V(t) = [v_1(t)\ v_2(t)\ v_3(t)]$
$v_1(t) = r(t)$
$v_{i+1} = \left(m_i(\hat{x})) \operatorname{sign}(x(v_i(t) - h_i(\hat{x}(t)))\right)_{eq}, \quad i = 1,2$
$M(\hat{x}) = diag\left(m_1(\hat{x})\ m_2(\hat{x})\ m_3(\hat{x})\right)$

--.

In column 6, line 33, please delete

" $R=[a_{lat}-\hat{a}_{y1}\delta-\hat{\delta}a_{lat}-\hat{a}_{y2}C_f-\hat{C}_f a_{lat}-\hat{a}_{y3}C_r-\hat{C}_r]$ (6) "

and insert --

$$R = [a_{lat} - \hat{a}_{y1}\ \delta - \hat{\delta}\ a_{lat} - \hat{a}_{y2}\ C_f - \hat{C}_f\ a_{lat} - \hat{a}_{y3}\ C_r - \hat{C}_r] \quad (6)$$

--.

In column 8, line 42, please delete "said-residual," and insert -- said residual --.

In column 10, line 20, please delete "generator a" and insert – generator, a --.

A review of the Application as submitted and thereafter as amended, confirms that the errors were made in the printing of the patent.

Since the above noted errors for which a Certificate of Correction is sought were a result of Patent Office mistake, no fee is due (35 U.S.C. § 254). Approval of the Certificate of Correction respectfully is solicited.

Respectfully submitted,

Date: August 23, 2004

By: Carol G. Stovsky

Carol G. Stovsky
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PTO/SB/44 (05-03)
Approved for use through 01 /31/2004. OMB 0651-0033
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

(Also Form PTO-1 050)

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO : 6,766,230 B1

DATED : July 20, 2004

INVENTOR(S) : Rizzoni, et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

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$$\vdots \qquad \vdots$$

$$\begin{cases} \dot{x}_m = f_m(x_m, u_m, \theta_m) \\ y = h_m(x_m, u_m, \theta_m) + \Delta y \end{cases}, x_m \in \Gamma_m$$

and insert –

$$\begin{cases} \dot{x}_1 = f_1(x_1, u_1, \theta_1) \\ y = h_1(x_1, u_1, \theta_1) + \Delta y \end{cases}, x_1 \in \Gamma_1$$

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–.

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PATENT NO. 6,766,230 B1

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and insert --

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